**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of identifying endmember spectra values from multispectral image data, where each multispectral data value is equal to a sum of mixing proportions of each endmember spectrum, said method including the steps of:

processing the data to obtain a multidimensional simplex having a number of vertices equal to the number of endmembers, the position of each vertex representing a spectrum of one of the endmembers,

wherein the processing of the data includes:

providing starting estimates of each endmember spectrum for each image data value;

estimating [[~~the~~ ]] mixing proportions for each data value from the estimates of the spectra of all the endmembers;

estimating the spectrum of each endmember from the estimates of the mixing proportions of the spectra of all the endmembers for each image data value[[;]], and

repeating the estimation steps until a stopping condition is met, wherein the stopping condition occurs when a relative change in ~~the~~ a ~~regularised~~regularized residual sum of squares determined in the estimation steps attains a threshold~~is sufficiently small~~,

wherein the ~~regularised~~regularized residual sum of squares ~~including~~ includes a term which is a measure of the size of the simplex.

2. (Currently Amended) A method according to claim 1, wherein the term used in the ~~regularised~~regularized residual sum of squares is the sum is the squared distances between all of the simplex vertices.

3. (Cancelled).

4. (Cancelled)

5. (Currently Amended) A method according to claim 1, wherein the relative change in the ~~regularised~~ regularized residual sum of squares is determined by calculating a ~~regarded as sufficiently small when the~~ ratio ~~of~~ comprising successive values of regularised residual sum of squares ~~is less than a tolerance~~.

6. (Currently Amended) A method according to claim ~~1~~5, wherein the stopping condition is met when the ~~tolerance is~~ratio attains 0.99999.

7. to 9. (Cancelled)

10. (Currently Amended) A method according to claim 1, wherein the step of estimating the spectrum of each endmember is conducted using a linear estimation technique.

11. (Currently Amended) A method according to claim 1, wherein the step of estimating the mixing proportions is conducted using a quadratic ~~minimisation~~ minimization technique.

12. (New) A method according to claim 1, wherein estimating the mixing proportions for each data value occurs iteratively so as to minimize a first residual sum of squares, the first residual sum of squares comprising a term which is a measure of the size of the simplex.

13. (New) A method according to claim 12, wherein estimating the spectrum of each endmember occurs iteratively so as to minimize a second residual sum of squares, the second residual sum of squares comprising a term which is a measure of the size of the simplex.

14. (New) A method according to claim 13, wherein the relative change in the regularized residual sum of squares is determined by calculating a ratio comprising successive values of a minimized regularized residual sum of squares, wherein the

successive values of the minimized regularized residual sum of squares are minima of the second and first regularized residual sum of squares calculated for each repetition of the estimation steps.

15. (New) A method according to claim 13, wherein the stopping condition is met when the ratio attains a tolerance value.

16. (New) A method according to claim 1, wherein the most recently estimated spectrum of each endmember are the identified endmember spectra values from the multispectral image data.

17. (New) A method according to claim 16, wherein the most recently estimated mixing proportions of each data value are identified proportions of each of the identified endmember spectra values present in each data value of the multispectral image data.